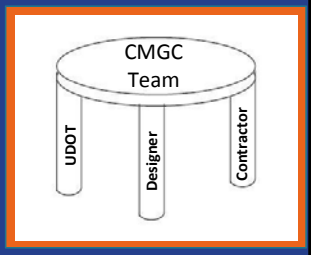
Randy Park, PE
Project Development Director
Utah Department of Transportation

CMGC Experience & Lessons Learned

CMGC Team Approach

- Partnering
- Build Trust
- Project Challenges Identified
- Contractor Bids Actual Line Items (Not GMP)

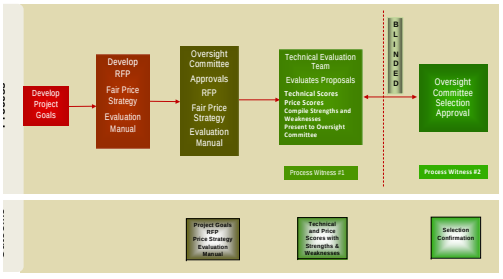


Benefits of CMGC

- Highest Level of Partnering
- Deliver the Best Transportation Project at the Best Value
- Owner Makes Informed Decisions
- Optimize Innovations
- Risks Managed Throughout Project Delivery by the Team
- Exceed Public Expectations (Outreach)
- Political Capital from Success

Contractor Selection Process

CMGC Selection Process

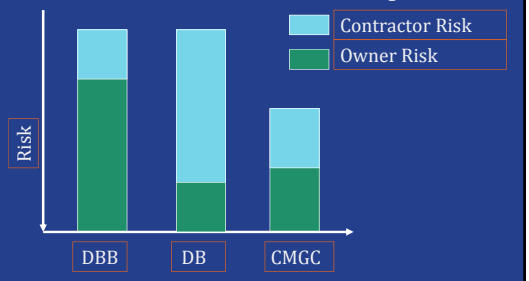


Blinded - Conceal the identity of the Contractors submitting the Proposals; Ensures Proposals are reviewed objectively and that the possibility of bias, whether real or perceived is avoided.

Why CMGC?

Collaborative Effort to Reduce Risk & Apply Innovations

***Goal is to Retire Risk Prior to Pricing



Engineering Solutions Due to Innovative Contracting in Utah

- **PROJECT TEAM MENTALITY**
- Advances in Roadway Geometry:
  - DDI, CFI, Flex Lanes, Movable Barrier, Reversible Lanes
- ABC Program:
  - I-80 Bridge Farm
  - Precast Structural Elements (Bents, Columns, Superstructure, Deck, Pavement Slabs)

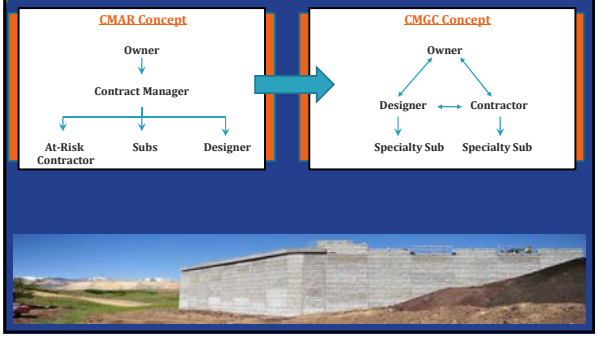
UDOT CMGC Program

- Centralized Roles
  - Procurement
  - FHWA Reporting
- Project Team (UDOT, Consultant, Contractor)
  - Procurement
  - Design
  - Construction
  - Project Closeout

UDOT Innovative Contracting

- CM/GC (2004 – 2013)
  - 31 Projects Totaling $1.27 B
  - Largest Project - Mountain View Corridor ($450 M)
    - Most average around $25 M
- DB (1998 – 2013)
  - 45 Projects Totaling $5.4 B
  - Largest Projects – I-15 SLC ($1.6 B), I-15 CORE ($1.1 B)
    - Most average around $50 M

UDOT Development of CMGC



Fair Price Strategy

- Engineer's Estimate
  - Must be both production based and statewide averages
- Contractor's Estimate
  - Prepared for specific project bid items
  - Typically based on production rates and unit price
- Independent Cost Estimate (ICE)
  - Cost validation
  - Reflects current market conditions

Innovation Savings

Project Description	Anticipated Price	Estimated Direct Savings	Estimated User Cost Savings
4500 S AT I-215	$6,896,917.19		$40,000,000.00
ATKINVILLE INTERCHANGE	$42,084,814.57	$4,700,000.00	
I-15 BRIDGE RECONSTRUCT	$9,032,135.05	$240,000.00	$43,000,000.00
I-80 RECONSTRUCT Ph2	$116,425,488.79	$4,000,000.00	$122,000,000.00
RIVERDALE RD Ph3	$41,748,562.31	$3,260,000.00	$84,000,000.00
VIRGIN RIVER TRAIL	$1,296,518.74	$180,000.00	
SP-RIVER RD TO AIR PORT	$14,024,172.74	$1,400,000.00	
Total	**$231,508,609.39**	**$13,780,000.00**	**$289,000,000.00**
Savings as a Percent of Anticipated Price:		**6%**	**125%**

* Majority of Savings is accomplished by risk management and risk avoidance!

Beneficial Use of CMGC

Projects with:

- High complexity
  - Contractor input valuable to project design
  - Opportunities for innovation
- Owner maintaining control of the design
- Introduction of new innovations
- Early start possible during design
  - Early procurement of long lead items
- Third Party risk
- Variable scope
- Schedule is not a main driver to allow preconstruction phase

What Does UDOT Expect from CMGC

- Better designs
- Better schedules/reduced impact to the public
- Lower costs
  - Savings in design
  - Savings in construction
  - Savings from innovation
  - Savings from reduced risk

UDOT Lessons Learned - General

- Build & develop trust
  - Team building, partnering requirements, & dispute resolution
- Co-location
- Partnering
  - Project level and Executive level
- Cost management strategy
- Communication

UDOT Lessons Learned – Procurement

- **Project Goals
- Project Scope
- RFP "Boiler Plate"
- Well defined selection criteria & scoring method
  - Focus on the differentiators
  - What are the minimum qualifications?
  - Project specific

UDOT Lessons Learned – Procurement

- Project Pricing
  - At a minimum, request a cost model (approach to price)
  - Require detailed bid summaries
- Project Budget & Transparency
- Past Performance & Project Team

UDOT Lessons Learned – Procurement

- Blinding of the Oversight Committee
  - Technical Evaluation Team presents as Proposer A, B, C, etc.
  - Oversight Committee provides an unbiased perspective
- Always leave an option for interviews
- Include a Consultant & Contractor as a member of the evaluation team
- Documented Selection Process
- Cultural Change to move from low price to best value.

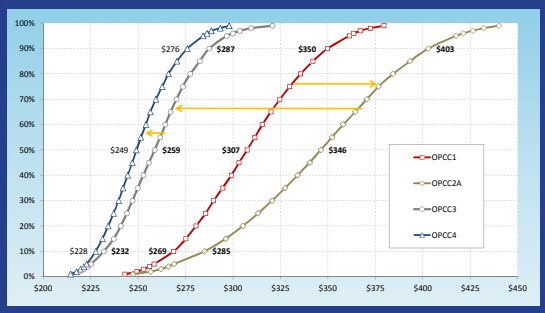
UDOT Lessons Learned - Design

- Quick Decision Making
- Contractor Input (key to innovation & savings)
- Risk Identification & Management
- Important to watch Scope, Schedule, & Budget
  - Set goals to keep the team focused
  - Know your schedule limitations
  - Have candid budget discussions
- Value Engineering
  - Procurement and/or Design

UDOT Lessons Learned - Design

- Blind Bid Opening (30%, 60%, & 100%)
- ICE, EE, & Contractor Discussions
  - It's okay to discuss means and methods, material sources, locations, etc.
  - It's not okay to talk dollars (we discuss ranges)
  - It's valuable to have the ICE involved in project meetings
- Documentation
  - Decisions, Risk, Pricing, Comment Resolution, Etc.

Results – Reduced Construction Cost



UDOT Lessons Learned - Design

- Final Quantity Verification
- Released for Construction Plans
- Staffing
  - Cost Team
  - Risk Analysis & Management
  - Schedule Team
  - Technical Resources
- Severability (key to process)

UDOT Lessons Learned - Construction

- Design to Construction Handoff
- Payment Schedule
- Early NTP
- Risk Management Strategies
- Severable Packages
  - Order Girders
  - Order State Furnished Equipment
  - Build Haul Road
  - Clear & Grub
  - Early Utility Work
  - Stockpile Material

Summary of Best Practices

- Project Manager is Key (Right People + Right Project = Success)
- Open Communication Required
- Getting to Why Designer & Contractor's Approaches & Prices are Different
  - Really understanding what is included and what is reasonable
- Risk Assessment, Mitigation, & Management Strategies
- Trusting Team Relationships
- If Preparing Multiple RFC Phases of Project, Ensure Severability
- Involve Industry in CMGC Process
  - RFP Review Period
  - AGC & ACEC Voting Members
- Benefits of Production Estimating versus Historical Averages
- Follow Standard Practices As Much As Possible

Change Orders

- State Department of Transportation's Integrity is following defined process
- In CMGC – The Process involving the Independent Cost Estimator (ICE) allows for fair pricing
- Change orders are reduced by Project Team Approach

CM/GC and DBE's

- UDOT follows same process for DBE's regardless of procurement method

Critical Success Factors

- Project Team Concept
- Industry Buy In
- Leadership Support
- Accepting Best Value vs. Low Price (result – lower overall price)
- Picking the right projects
  - Risk Mitigation Opportunities
  - Public Involvement Opportunities
  - Time to allow Design Phase
  - Legislative Support

MVC Project Overview

- Salt Lake County (2010 to 2013)
  - CMGC
  - 15 mile segment
  - Two lanes in each direction
- Utah County (2010 to 2011)
  - Low bid
  - 3 mile segment
  - Two lanes in each direction

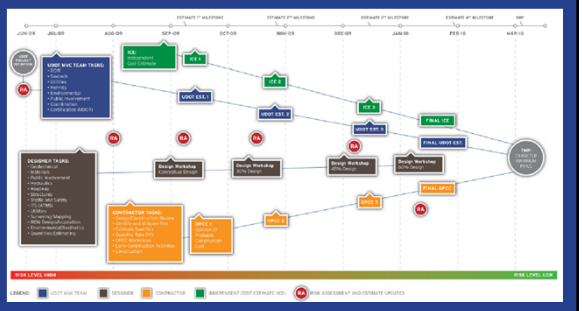
Mountain View Corridor

ROW budget more than construction budget:

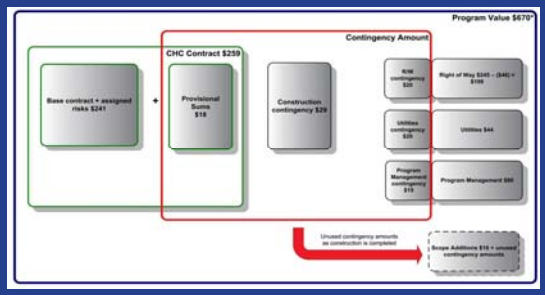
- 418 parcels
- $322 million budget
- 20,000 seat amphitheater
- 18-hole golf course
- 140 homes
- Less than 2% condemnation
- 0 construction delays

- New 20 Mile 2-Lane Highway with Frontage Road & Bicycle/Pedestrian Trail
- & Transit Connections

Preconstruction Phase



Program Budget & Contingency Overview



CMGC Innovation

- $25M savings through alternative design analysis and construction innovation – DART Process
- $12M cost reduction in utility relocation – protect in place, means and methods analysis with utility owners
- $6M savings due to schedule compression
- $9.5M savings due to elimination of a rail bridge

MVC – Key Accomplishments

- **Construction Manager**
- **$100 Million Cost Reduction**
- Design innovation saved $25 million
- Schedule optimization
- Risk allocation (ROW/Utilities to owner)
- Design progression
- Risk retirement
- Crushing operation

- **General Contractor**
- **2 Million more yards of dirt moved north; $50 million additional ROW to north**
- Complete on schedule, on budget
- Open book pricing
- Shared schedule
- Risk management
- Kennecott Rail (bridges to dirt)
- ROW acquisition
- Provisional sums to dirt

SR 14 Landslide

Risks:

- Slope stability;
- Existing mine shafts;
- Water within the slide;
- Roadway excavation quantity;
- Size of rock in roadway excavation; Placement of material;
- Stream channel work

U.S. Department of Transportation
Federal Highway Administration

innovation ingenuity imagination invention

Every Day Counts